REMARKS

Claims 1-13 and 15-22 are pending in this application. By this Amendment, claim 15 is amended to correct obvious typographical errors. No new matter is added. Reconsideration of the application based upon the above amendments and the following remarks is respectfully requested.

The courtesies extended to Applicants' representatives by Examiner Ramdhanie and Supervisory Examiner Griffin at the interview held April 1, 2008, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicants' record of the interview.

I. Rejections Under 35 U.S.C. §103(a)

Claims 1-5, 9-12, and 15-18 are rejected under 35 U.S.C. §103(a) over Chamberlain (U.S. Patent No. 5,008,136) in view of Smith (U.S. Patent No. 6,434,267). Claims 6-8 and 13 are rejected under 35 U.S.C. §103(a) over Chamberlain in view of Smith and in further view of Bhardwaj et al. ("Bhardwaj", U.S. Patent No. 5,580,172). Claims 19-20 are rejected under 35 U.S.C. §103(a) over Chamberlain in view of Smith and in further view of Byrd et al. ("Byrd", U.S. Patent No. 4,739,115). Claims 21-22 are rejected under 35 U.S.C. §103(a) over Chamberlain in view of Smith and in further view of Furuya et al. ("Furuya", U.S. Patent No. 6,048,910). Because the rejections are related, they are addressed together. Applicants respectfully traverse the rejections.

a. Chamberlain

Regarding independent claims 1 and 15, Chamberlain teaches techniques that employ coatings that change color at one or more known temperatures and that produce a temperature profile over the whole surface of a component, rather than just at discrete points as with thermocouples (Chamberlain, col. 1, lines 15-24). Chamberlain also teaches that temperature indicating paints have shortcomings, one of which is that the color/physical changes are to a

varying degree time dependent and to a lesser extent pressure dependent (Chamberlain, col. 1, lines 24-28). Chamberlain further teaches that to overcome the time dependent nature of known thermal paints, a datum coating, which has been previously demonstrated to be time and environmentally independent, can be applied to provide an isotherm on a component (Chamberlain, col. 1, lines 35-40).

Chamberlain further teaches that the mechanism that governs the change in the datum coating to form the isotherm should be a function of temperature, and irrespective of the operating gas environment such that the datum isotherm can be allocated to the component with confidence regardless of the running time or operating conditions (Chamberlain, col. 1, lines 40-45). Chamberlain also teaches that the paint, which can be used as a datum marker, is sprayed or brushed onto a specimen to produce a specular finish (Chamberlain, col. 3, lines 39-42; lines 59-61). Chamberlain further teaches that when using the paint, as a thermal datum marker, a physical change in the specular finish that is observable by the human eye is all that is necessary to allocate an isotherm (Chamberlain, col. 4, lines 8-11).

Additionally, a person skilled in the art would recognize that the datum coating of Chamberlain exhibits a change in color at a known transition temperature. Therefore, the datum coating is actually a temperature indicating paint that changes color only based on a change in temperature, thereby making the datum coating suitable for the internal calibration of a thermal paint, as disclosed in Chamberlain (Chamberlain, col. 1, lines 45-48). Chamberlain thus fails to teach or suggest a marker paint that does not change color, as claimed.

Chamberlain additionally teaches that the surface of a flame sprayed metal coating, previously used for internal datum markers, is extremely rough, which causes both contamination and interpretation problems (Chamberlain, col. 2, lines 1-3). Chamberlain simply states this as one of several reasons metal coatings are not suitable to be used as

internal datum markers. Chamberlain does not teach or suggest analyzing the image of a coating to determine if any debris and/or dirt have been deposited onto the marker paint. Chamberlain further fails to teach or suggest determining the amount of any debris and/or dirt that is deposited on the marker paint. Chamberlain thus fails to teach or suggest analyzing the image of an irreversible temperature indicating paint to determine the temperature at different regions of the component taking into account the amount of any debris and/or dirt deposited on the marker paint, as claimed.

Regarding independent claim 15, Chamberlain teaches a temperature indicating paint comprised of an organic resin, high temperature glass frit resin and one or more of the following elements: silver, gold, platinum, palladium, copper, nickel, chromium, titanium, and silicon, dispersed in a solvent (Chamberlain, abstract). Chamberlain teaches the use of metals, which are defined as chemical elements or one or more chemical elements fused to form an alloy, which are good conductors of heat and electricity, are malleable, ductile and lustrous. However, the pigment of the present claims is comprised of ceramics, not metals, which are defined as hard, brittle, heat resistant compounds, usually formed from metallic elements and oxygen, carbon, nitrogen, and sulfur. Nowhere does Chamberlain teach or suggest a marker paint comprising a pigment, a binder, and a solvent; wherein the pigment specifically comprises cobalt titanium oxide, titanium nickel antimony oxide, cobalt aluminum oxide, or cadmium sulfide selenium, as claimed.

Chamberlain further teaches that its paint preferably comprises 40-60% metal particle pigment, 5-15% inorganic glass frit high temperature binder, and the remainder is organic resin binder (Chamberlain, col. 2, lines 20-23). Chamberlain thus fails to teach or suggest a marker paint comprising 42-52wt% pigment, 31-37wt% acrylic resin, and 17-21wt% silicon resin excluding solvent, as claimed.

b. Smith

Smith does not overcome the deficiencies of Chamberlain. Regarding independent claims 1 and 15, Smith teaches creating an image of a thermally painted component using a digital camera (Smith, col. 4, lines 12-13). In Smith, each pixel within the image is subsequently analyzed by a computer to determine which of a set of predetermined colors it is closest to (Smith, col. 4, lines 13-15). Since the computer analyzes every pixel of the image produced by the camera, the image may be filtered to remove unwanted information, such as small spots of color caused by, for example, soot (Smith, col. 7, lines 17-19).

Filtering is commonly known as the process of removing or blocking access to data that meets a particular criterion. In Smith, the unwanted information is removed, or filtered, prior to interpreting the pixels of the image by converting these values into temperatures (Smith, col. 7, lines 45-49). Smith disregards the pixel data that corresponds to the soot rather than using that information to further analyze the pixel data that represents the color changes in the thermal paint. Smith thus fails to teach or suggest applying a marker paint to a component, wherein the marker paint does not change color with temperature, as claimed. Smith also fails to teach or suggest viewing the marker paint on the component and analyzing the image produced to determine if any debris and/or dirt has been deposited onto the marker paint to determine the amount of any debris and/or dirt on the marker paint. Smith further fails to teach or suggest analyzing the image of the irreversible temperature indicating paint to determine the temperature of the different regions of the component, taking into account the amount of any debris and/or dirt that has been determined to have been deposited onto the marker paint.

Regarding independent claim 15, nowhere does Smith teach or suggest any specific paint composition. Smith thus fails to teach or suggest a marker paint comprising a pigment, a binder and a solvent, the pigment comprising cobalt titanium oxide, titanium nickel,

antimony oxide, cobalt aluminum oxide, or cadmium sulfide selenium, and wherein the marker paint comprises 42-52wt% pigment, 31-37wt% acrylic resin and 17-21wt% silicon resin excluding solvent, as claimed.

c. Bhardwaj

Bhardwaj, cited only against dependent claims 6-8 and 13, does not teach or suggest a method of analyzing a temperature indicating paint using a marker paint. Therefore, Bhardwaj does not overcome the deficiencies of Chamberlain and Smith, as discussed above.

d. Byrd

Byrd, cited only against dependent claims 19-20, also does not teach or suggest a method of analyzing a temperature indicating paint using a marker paint. Therefore, Byrd does not overcome the deficiencies of Chamberlain and Smith, as discussed above.

e. Furuya

Furuya, cited only against dependent claims 21-22, also does not teach or suggest a method of analyzing a temperature indicating paint using a marker paint. Therefore, Furuya does not overcome the deficiencies of Chamberlain and Smith, as discussed above.

f. Conclusion

Claims 2-13 and 15-22 variously depend from independent claims 1 and 15. Because Chamberlain, Smith, Bhardwaj, Byrd and Furuya fail to teach or suggest, alone or in combination, the features recited in independent claims 1 and 15, dependent claims 2-13 and 16-22 are patentable for at least the reasons that claims 1 and 15 are patentable, as well as for the additional features they recite.

Accordingly, any combination of the cited references fails to teach or suggest a method of analyzing a temperature indicating paint using a marker paint, as claimed. The references thus would not have rendered obvious the claimed invention. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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Attachment:
Petition for Extension of Time

Date: April 2, 2008

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